

and to which of them the bones belonged, who shall say? The full-sized specimen of *Dinornis* has been selected for comparison; and if, as would certainly appear, the bones might have belonged to a smaller bird, I contend that they are not those of the bird which laid an egg eight times the volume of that of the Ostrich, but some smaller species of *Aepyornis*; it may be of *Aepyornis grandidieri*, or another. We ought to bear in mind that these osseous remains and the eggs bear indications of disturbance, and therefore it is probable of mixture of species. No authenticated egg of *Dinornis giganteus* has yet been discovered; those put forward as such may belong to some of the smaller kinds of that bird, or may not. We have no certain knowledge to go upon, and I have made no scientific examination of any.

2. Descriptions of a New Genus and a New Species of Macrurous Decapod Crustaceans belonging to the *Penæidæ*, discovered at Madcira. By JAMES YATE JOHNSON, C.M.Z.S.

One of the two forms of Crustaceans I am about to describe belongs to the genus *Penæus*; whilst the other, though closely allied to that genus, is so remarkable for the peculiar structure of the mandibles, that I propose to make it the type of a new genus named *Funchalia*. In the normal species of *Penæus* the jaws compose a combined cutting- and crushing-apparatus, each having externally an acute edge with teeth; whilst outside the mouth the jaws are so formed as to constitute a tuberculated implement for breaking or pulping by pressure any substance introduced between them. But in the crustacean on which the new genus is founded the jaws are represented by a pair of long sickle-shaped shears, which cross each other from opposite sides of the mouth.

FUNCHALIA WOODWARDI, gen. et sp. n., ♀.

Colour a uniform red. Carapace compressed and studded with minute warts, which bear short downy hairs. A median crest commences near the posterior border, and projects in front as a rostrum. The surface of the carapace is unarmed; but there is a blunt tooth at the outer side of the ocular excavation, and another at each anterior lateral angle of the carapace, each of these teeth being the termination of a crest or ridge, the upper one of which, after bending so as to form an elbow at a point which is a little in advance of the middle of its course, runs backwards to the posterior border of the carapace. Eyes —? The basal joint of the superior antennæ is excavated for the reception of the eyes; and the inner border of the excavation carries a lamellar-fringed appendage; whilst the outer border is beset with long hairs, and terminates in a weak acute tooth. The second joint is trigonous and shorter than the first, but longer

than the third, which is cylindrical. Filaments —? The cylindrical peduncle of the inferior antennæ does not extend quite so far as the basal joint of the superior antennæ. It carries a single filament. The lamellar palp is narrowly oval, and reaches beyond the peduncle of the superior antennæ. Its upper surface is marked by a deep longitudinal groove. The basal joint is unarmed.

The external jaw-feet are pediform and slender. They extend beyond the peduncle of the inferior antennæ, but not so far as the distal extremity of the superior antennæ. They are furnished with a many-jointed palp as long as the feet, fringed with hair on both edges. The second joint has a sharp exposed edge; and the lamellar appendage attached to the basal joint is bifid and similar to the appendages of the ambulatory legs. The next pair of jaw-feet are flattened, and are much shorter than either the external pair or their own palps, which are not quite so long as the palps of the external pair. The three remaining pairs of jaw-feet are elongate, imperfectly divided into joints and very thin. The mouth is destitute of the powerful cutting- and crushing-jaws which characterize the species of the genus *Penæus*; but it is furnished with a pair of long sickle-like shears, which cross each other from opposite sides. At each side of the mouth there is a broad lamellar appendage.

None of the ambulatory legs is multiarticulate. They are slender, and the order of their length is 4, 3, 5, 2, 1, the fourth pair being the longest. The legs of the three anterior pairs are didactyle; and at the base of each of these legs there is a lamellar bifid fringed appendage. The legs of the two anterior pairs carry a spine at the distal extremity and at the underside of the second and third joints. The other legs are unarmed, but have hairs on the undersides or edges of their joints. The legs of the third pair extend the furthest forward, but they do not reach so far as the distal extremity of the peduncle of the inferior antennæ. The orifices of the oviducts are on tubercles upon the inner side of the basal joint of these legs. The sternum is very narrow, and has a protuberance between each of the fourth and fifth pairs of legs.

The unarmed abdomen is compressed and clothed with short hairs on the less exposed parts. The sides are corrugated and project over the bases of the false feet. The first segment is the highest, the sixth the longest. A low median crest commences on the third, and is continued on the fourth, fifth, and sixth segments. At the sides of the anterior five segments there are ridges of irregular form. On the sixth there are four straight longitudinal ridges in addition to the median crest. At each side of the posterior margin of the sixth segment there is a small projecting lobe, and a small tooth is seen at each posterior angle. To the anterior five segments are attached well-developed false feet with stout peduncles, bearing (except in the case of the first pair) two many-jointed fringed palps, the outer one being the longer. The false feet of the first pair have only one palp that does not extend beyond the middle of the carapace. The second, third, and fourth pairs of false feet are longer than the first. The seventh abdominal segment, or middle caudal

plate, is shorter than either the sixth segment or the lateral swimming-plates. It is narrow and pointed, furnished with a deep longitudinal groove on its upper surface and a small marginal tooth at each edge, nearer the base than the posterior extremity. The lateral swimming-plates are narrowly oval, and those of the inner pair are marked on their upper surfaces by two longitudinal ridges, those of the outer pair by four similar ridges. There is a tooth at the outer side of the latter pair of plates, not far from the posterior extremity.

The imperfect condition of the single individual obtained prevents me describing the rostrum, the eyes, and the filaments of both pairs of antennæ. It may be stated, however, that the rostrum appears to have carried a crest at each side, that the longer filament of the superior antennæ is thickened at the base and setiform above, whilst the shorter filament of these antennæ is setiform throughout, and that the filament of the inferior antennæ is compressed below. It may be further stated that the median carapacial crest appears to have carried a small tooth at a point distant about three-tenths of the length of the carapace from the anterior border.

The species is named in compliment to my friend Mr. Henry Woodward of the British Museum, well known for his labours amongst fossil crustacea.

The following are the dimensions of the specimen, which is now in the British Museum:—

	inches.
Total length from anterior border of carapace to end of caudal plates	$6\frac{1}{2}$
Carapace, length of side	$2\frac{1}{2}$
——, height	1
——, thickness	$\frac{3}{4}$
Lamellar palp of inferior antennæ	$1\frac{1}{8}$
Jaw-feet, length of external pair	$1\frac{1}{2}$
Ambulatory legs, length of fourth pair	$1\frac{1}{4}$
—— —, length of third pair	$1\frac{1}{8}$
—— —, length of first pair	$1\frac{1}{8}$
False feet, length of second, third, and fourth pairs ..	$1\frac{3}{8}$

PENÆUS EDWARDSIANUS, sp. n., ♀.

Colour a brilliant crimson, with an obscure fuscous cross band on the hinder part of the carapace and on each abdominal segment. Carapace somewhat compressed, shining, hairless, its surface unarmed, with a low obtuse median crest commencing near the posterior border. This crest rises gradually, and projects in front as the rostrum, which is long, pointed, compressed, rather slender, and curved obliquely upwards for its anterior half. At each side of its basal portion there is a rounded crest. It extends beyond the peduncles of both pairs of antennæ, and beyond the lamellar palp of the superior antennæ; but it is considerably shorter than the carapace. It carries two small teeth—one a little in advance of its base, and a second further in front, separated from the first by a distance equal to one-fourth of the length of the rostrum. About the same

distance behind the posterior rostral tooth there is a tooth on the median crest of the carapace. The under edge of the rostrum is destitute of teeth. There is a fringe of hair in the neighbourhood of the rostral teeth, and on the under edge of the rostrum as far as the upper fringe extends. At the front border of the carapace there are four small teeth—one over the exterior base of each of the superior antennæ, and one over the base of each of the inferior antennæ. Each of these teeth forms the termination of a ridge; and of these ridges the two nearer the lateral margins of the carapace are higher and longer than the other two. About the middle of the height of the carapace there is another ridge on each side, but it does not extend backwards beyond the middle of the length of the carapace. Between the two principal ridges the carapace is concave; and there is a furrow on the upperside of the exterior ridges; these furrows extend backwards to about the middle of the length of the carapace, and they then bend obliquely downwards towards the lateral borders. At the bend another furrow commences, which widens backwards and upwards until it reaches nearly to the posterior border of the carapace. An intramarginal furrow extends round the carapace, except in front; and the sides have a broad membranous border.

The eyes are black, round, large, and of greater diameter than the stalk. The eye and stalk together are less than half as long as the peduncle of the superior antennæ, and do not reach so far as the base of the filament of the inferior antennæ.

The basal joint of the superior antennæ is excavated to receive the eye; there is a blunt recumbent tooth on the external edge of the excavation, near the base, and a second tooth, which is sharp, near the distal extremity; the inner edge is thickly set with hair, and bears a small tooth near the base. The third joint is shorter than the second, which is cylindrical, and the second than the first. The lower of the two filaments is very long, being about equal to the total length of the animal; whilst the other is compressed and very short, being much shorter than the carapace. The peduncle of the inferior antennæ is cylindrical; and its single filament is slender and very long, being much longer than the animal. The antennal scale or lamellar palp extends beyond the peduncle of the superior antennæ; on its upper face there is a deep longitudinal groove near the outer margin, and a small tooth on the outer border near the extremity; the inner border is fringed with hair. The joint to which this scale is attached is stout, and carries a strong tooth on its under-side.

The external jaw-feet are large and pediform; they are more than twice as long as the multiarticulate ciliate palp, and they reach to the distal extremity of the lamellar palp of the inferior antennæ. The next pair of jaw-feet are much shorter, and are only half as long as their very elongate multiarticulate ciliate palps. The third joint of these jaw-feet is much compressed and broad. Each of the jaw-feet of the two outer pairs is furnished with a ciliate lamellar appendage at the base; the remaining three pairs of jaw-feet are short, and are furnished with several lamellar appendages.

The jaws are powerful, each consisting of an external cutting edge and a tuberculated crushing-apparatus inside. On the upperside of the mouth there is a large membranous lip.

The sternum is very narrow, and between each of the fourth and fifth pairs of legs there is a large transverse deltoid tooth. All the ambulatory legs are slender and unarmed, except by their terminating nails; the order of their length is 3, 5, 4, 2, 1, those of the third pair being the longest. The legs of the three anterior pairs are didactyle, with smooth hands and slender fingers. On the underside of the first pair of legs are some long bristly hairs. The two posterior pairs are monodactyle. None of the members are multiarticulate. To the basal joint of all except those of the last pair is attached a lamellar appendage, which lodges under the carapace.

The abdomen is hairless, shining, sparsely puncturate, subcompressed in front, much compressed behind; the sides of the segments project over the bases of the false feet. On the third segment commences a low median crest, which becomes more and more conspicuous on the posterior segments; and this crest projects a small tooth at the posterior border of the third, fourth, fifth, and sixth segments. The three anterior segments are marked by a deep transverse groove in their anterior halves; and there is a small notch at each side of the posterior border of the first, second, fourth, and fifth segments, whilst at the same place on the sixth there is a large rounded lobe. A small tooth is seen at the posterior angles of the segments from the second to the sixth inclusive. The false feet of the five anterior segments are well developed; their peduncles are stout; and all (except in the case of the first) carry two many-jointed ciliate palpi, one of which is much longer than the other. The single palp of the first pair of false feet is longer than the other palps. The inferior surface of the abdomen is covered with membrane. Between the bases of the first three pairs of false feet there is a deltoid process terminating in a tooth. The middle caudal plate or seventh abdominal segment is narrow, and terminates in a spine; its sinuous borders are fringed with hair. The middle of the upper surface is depressed, and the sides are marked by two low ridges. The lateral swimming-plates are narrowly oval, and extend beyond the middle plate; those of the outer pair are fringed with hair on the inner edge, whilst the upper surface is marked with two longitudinal furrows near the outer margin, and there is a small spine on the outer edge near the extremity. The inner pair of plates are fringed with hair on both edges. At the middle of the upper surface there are three longitudinal furrows.

A single specimen of this fine crustacean, the largest and handsomest of its genus, was obtained at Madeira, where it appears to be of rare occurrence; but in the fish-market of Algiers I have frequently seen considerable quantities of a red *Penæus* which, after careful examination, I do not hesitate to assign to the same species, notwithstanding a few differences of minor importance.

The species is dedicated to Dr. Alphonse Milne-Edwards, of the Jardin des Plantes, Paris, the son of the celebrated author of the 'Histoire Naturelle des Crustacées,' and himself the author of several valuable contributions to carcinological science.

The following dimensions were afforded by the Madeiran specimen, which has been added to the collection of the British Museum:—

	inches.
Length from tip of rostrum to end of caudal plates .	$13\frac{1}{4}$
—— of rostrum	$2\frac{1}{8}$
Carapace, length from base of rostrum to middle of posterior margin	$3\frac{7}{8}$
——, width near the middle	$1\frac{1}{2}$
——, height	$1\frac{3}{8}$
Eyes with their stalks, length	$1\frac{3}{8}$
Superior antennæ, length of peduncle	$1\frac{3}{4}$
Inferior antennæ, length of lamellar palp	$1\frac{1}{4}$
—— ———, width	$\frac{3}{4}$
Jaw-feet, length of external pair	4
——, length of next pair	$2\frac{1}{4}$
Legs, length of first pair	$2\frac{3}{4}$
——, length of third pair	$5\frac{1}{8}$
——, length of hand and fingers of third pair	$1\frac{1}{4}$
Abdomen, length to end of caudal segment	$6\frac{1}{2}$
False legs, length of first pair	$4\frac{1}{4}$
—— ———, length of last pair	$2\frac{3}{8}$
Middle caudal segment, length	$1\frac{1}{2}$

PENÆUS BOCAGEI, mihi, P. Z. S. 1863, p. 255.

I will take this opportunity of stating that the *Penæus* of the *Tagus*, described by me under the name of *P. bocagei*, is identical with the *P. longirostris* of M. Lucas (Exploration Scientifique de l'Algérie: Crustacées, p. 46, Atlas, pl. 4. f. 5), as I have ascertained by an examination of specimens obtained at Algiers, and by a study of M. Lucas's description. Dr. Camil Heller (Die Crustaceen der südlichen Europa) is of opinion that *P. longirostris* is itself identical with *P. membranaceus*, Risso, and thinks that Dr. Milne-Edwards, in his 'Histoire Naturelle des Crustacées,' vol. ii. p. 417, has inadvertently attributed to the *P. membranaceus* of Risso some of the characters of *P. siphonocerus*, Philippi (Archiv der Naturgeschichte, 1840, p. 19, t. 14. f. 3), which has a very short rostrum, whilst the true *P. membranaceus* has a long one. If Dr. Heller's views are correct (and I have no reason to suppose that they are not), it will be seen that the range of *P. membranaceus*, Risso (not Milne-Edwards), is not, as has been hitherto believed, limited to the Mediterranean.

It may be useful to point out how the five known species of Mediterranean *Penæi* may be distinguished from one another by means of their rostra.

- A. Rostrum shorter than peduncle of superior antennæ
(six teeth on upper edge) *P. siphonocerus*, Phil.
- B. Rostrum longer than peduncle of superior antennæ,
but shorter than carapace.
- a. Teeth on the under edge (filaments of superior antennæ shorter than peduncle)... *P. caramote*, auct.
- b. No teeth on the under edge.
- * Three teeth on upper edge, including carapacial crest (no spines on surface of carapace) *P. edwardsianus*, J. Y. J.
- ** Nine teeth on upper edge, including carapacial crest (four spines on surface of carapace, two on each side) *P. membranaceus*, Risso.
- C. Rostrum equal to carapace in length *P. foliaceus*, Risso.

3. On *Hyalonema lusitanicum*.

By J. S. BOWERBANK, LL.D., F.R.S., F.Z.S. &c.

On January 24th, 1867, Dr. Gray read a paper at the Zoological Society entitled "Notes on *Hyalonema lusitanicum*, and on the Genus in general," announcing that Prof. Bocage had presented to the British Museum a specimen of the above-named species. The author adds, "I am enabled to state that I believe it to be a most distinct species from the *Hyalonema sieboldii* of Japan," or, in other words, from the species he formerly described as *H. mirabilis*, the structural specific differences said by the author to exist between the two species consisting of differences in the number of spicula in the spiral axis, and their diameter as compared with each other in the respective species; but as these differences in length, number, and diameter of the spicula exist to a very great extent between young and old specimens of *H. mirabile*, such characters cannot certainly be admitted as specific distinctions. His observations on the size and form of the so-called polypes are equally vague and uncertain; and the varieties in structure cited may be as readily found in different specimens of *H. mirabile* as in Prof. Bocage's specimen of *H. lusitanicum*.

There is an aphorism in natural history that no two individuals of the same species are ever exactly alike; and this observation applies with greater force to the protean forms of the *Spongiadae* than to any other class of animals existing. If the author had but carefully studied the axial columns of the numerous specimens of *H. mirabile* in his possession, he could not but have rejected such very uncertain characters as those he has adopted. The above are the only organic characters cited by the author in behalf of his opinions; and he then takes flight into the realms of imagination in support of his purely speculative ideas on the structure and habits of the interesting animal under consideration.

Sterne took his hypothetical prisoner and shut him up in a dungeon, and then described all his imaginary woes and sufferings most pathetically; so the Doctor took his *Hyalonema*, denuded him of